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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/751,955	12/29/2000	Pamela A. Binns	H16-25538	8564

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HONEYWELL INTERNATIONAL INC.
101 COLUMBIA ROAD
P O BOX 2245
MORRISTOWN, NJ 07962-2245

EXAMINER

SHAH, NILESH R

ART UNIT	PAPER NUMBER
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2127

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/751,955

Applicant(s)

BINNS, PAMELA A.

Examiner

Nilesh R Shah

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-38 are presented for examination.
2. The cross reference related to the application cited in the specification must be updated (i.e. updated the relevant status, with PTO serial numbers or patent numbers where appropriate, on page 1, lines 5-6. The entire specification should be so revised).
3. Applicant cites an appendix throughout the specification (i.e. page 32 par 3.2). As per section 608.05(a) of the MPEP, applicant is limited to what can be placed in an appendix. Accepted materials for an appendix include a computer program with a limited number of lines.
4. If applicant feels current materials in appendix is needed in order to make invention work then applicant is advised to place material within formal drawings.
5. Finally, any changes to current appendix would require entire specification to be update.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1- 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Atlas et al ('Slack Stealing Job Admission Control) in view of Anderson et al (5, 448, 735) (hereinafter Anderson)

8. As per claim 1 Atlas teaches the invention substantially as claimed including a multitasking system executing real-time harmonic and dynamic tasks, a method of scheduling tasks comprising (page 2 lines 45-47, page 4 lines 19, 23-24, 36-37)

determining available slack for tasks at each priority level (page 2 lines 45-47, page 4 lines 19, 23-24, 36-37).

assigning priority levels to tasks (page 4 lines 36-37)

9. Atlas does not specifically teach the determining step taking into account a task that is inactivating.

10. Anderson teaches the use of taking into account tasks that are activating and inactivating (Fig. 17, col. 24 lines 4-15)

11. It would have been obvious to one skilled in the art at the time of the invention to combine the teachings of Atlas and Anderson to ensure that a task can be activated or deactivated

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at anytime. By being able to activated or deactivated a task the user can determine and use excess slack thus making the entire system more efficient.

12. As per claim 2, Atlas teaches a method wherein tasks are scheduled according to a rate monotonic algorithm (page 7, lines 6-10, 29-33, page 8 lines 8-15.)

13. As per claim 3 Atlas teaches a method wherein a periodic high priority task can steal slack from available slack without impacting an execution deadline of a periodic low priority task (page 2 lines 45-47, page 4 lines 19, 23-24, 36-37).

14. As per claim 4, Atlas teaches a method wherein determining available slack comprises:
determining slack consumed (page 2 lines 45-47, page 4 lines 19, 23-24, 36-37);
determining timeline slack (page 2 lines 45-47, page 4 lines 19, 23-24, 36-37);
determining reclaimed slack (page 2 lines 45-47, page 4 lines 19, 23-24, 36-37) and
determining idle time (page 2 lines 45-47, page 4 lines 19, 23-24, 36-37).

15. As per claim 5, Atlas teaches a method wherein determining timeline slack comprises maintaining a table that is recalculated (page 2 lines 45-47, page 4 lines 19, 23-24, 36-37)

16. Atlas does not specifically teach the determining step taking into account a task that is inactivating.

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17. Anderson teaches the use of taking into account tasks that are activating and inactivating (Fig. 17, col. 24 lines 4-15)

18. As per claim 6, Atlas teaches a method wherein determining available slack comprises maintaining accumulators for slack consumed, reclaimed slack, and idle time (page 2 lines 45-47, page 4 lines 19, 23-24, 36-37)

19. As per claim 7 Atlas teaches a method wherein tasks have periods, and wherein maintaining the accumulators comprises updating the accumulators upon the occurrence of an event from the group consisting of when crossing a period boundary (page 2 lines 45-47, page 4 lines 19, 23-24, 36-37)

when a task completes for period when executing on a fixed budget with slack to be reclaimed (page 2 lines 45-47, page 4 lines 19, 23-24, 36-37)

when a processor executing the tasks transitions from idle to busy (page 2 lines 45-47, page 4 lines 19, 23-24, 36-37)

when a task completes for period when executing on slack (page 2 lines 45-47, page 4 lines 19, 23-24, 36-37);

prior to calculating available slack for a new slack-consuming task (page 2 lines 45-47, page 4 lines 19, 23-24, 36-37)

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20. As per claim 8, Atlas teaches a method wherein determining available slack comprises predetermining accumulators to allow for overhead associated with allocating slack (page 2 lines 45-47, page 4 lines 19, 23-24, 36-37)

21. As per claim 9 Atlas and Anderson do not specifically teach a method wherein the multitasking system is a flight control system (page 2 lines 45-47, page 4 lines 19, 23-24, 36-37). However, it would have been obvious to one skilled in the art at the time of the invention to have included a flight control system in Atlas and Anderson's system because it will increase the field of use for Anderson and Atlas's system.

22. Claim 10 is rejected based on same rejections as stated in claim 1 above.

23. Claims 11-19 are rejected based on same rejections as stated in claims 1-9 respectfully.

24. Claim 20 is rejected based on same rejections as stated in claims 1 and 4 above.

25. Claims 21-28 are rejected based on same rejections as stated in claims 1, 4, 2, 5-9 respectfully.

26. Claims 29-37 are rejected based on same rejections as stated in claims 1-9 respectfully.

27. As per claim 38, Anderson teaches a method wherein the multitasking system is a real-time control system (page one lines 40-44)

28. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Saito et al (5,887,143), Lauer et al (5,455,825), Binns et al (6, 567, 840), Peris et al (5, 796,719) all have to do with the art of scheduling tasks.

Conclusion

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29. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nilesh R Shah whose telephone number is 703-305-8105. The examiner can normally be reached on Monday-Friday 8am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng An can be reached on 703-305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NS
March 2, 2004


MENG-AL T. AN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100